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ABSTRACT

This study surveys previous research about systems librarians and performs a systematic examination of position requirements through analysis of position announcements, responsibilities, required skills, job titles, degree requirements, personality qualifications, and salaries. The educational needs and emergent curriculum appropriate for educating systems librarians are also surveyed. It was found that there has been a significant change over the last decade in the role, definition, and qualifications of a systems librarian. Systems librarian was the most frequently used job title, and systems librarians still should have good oral/written communications and training skills. The concept that a systems librarian should be first a librarian and second a MIS (Master of Information Science) professional, however, is no longer supported by the job ad descriptions. Library employers are seeking applicants who hold a MLS (Master of Library Science) or MLIS (Master of Library and Information Science), but they want those applicants to possess high-tech qualifications and skills that more typically belong to MIS professionals. This study also found that to meet this change, different approaches are being implemented to educate systems librarians both within and outside of library school departments through integration of information technology and information science curriculum enhancements, information science program additions, and departmental merging with other information science departments. Appendices contain a job title listing for different cities and Internet, LISTSERV and World Wide Web resources for job ads. Contains 17 references. (Author/MES)

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Librarians in Name Only
Systems Librarianship and Job Seeking:
A Content Analysis

A Master's Research Paper submitted to the
Kent State University School of Library Science
in partial fulfillment of the requirements
for the degree Master of Library Science

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by

Robbie F. Taylor

July, 1999

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Abstract

Over the past two decades, due to the need for someone to plan, implement, and support the ever-increasing technical needs of the library, Systems Librarianship has emerged, evolved, and grown to become a specialization within the field of Library and Information Science. This study surveys previous research about Systems Librarians and performs a systematic examination of position requirements through analysis of position announcements, responsibilities, required skills, job titles, degree requirements, personality qualifications, and salaries. This study also surveys the educational needs and emergent curriculum appropriate for educating Systems Librarians.

This study found that there has been a significant change over the last decade in the role, definition, and qualifications of a Systems Librarian. The job title Systems Librarian was the most frequently used job title and Systems Librarians still should have good oral/written communications and training skills. The concept that a Systems Librarian should be first a librarian and secondarily a MIS professional, however, is no longer supported by the job ad descriptions. Library employers are seeking applicants who hold a MLS or MLIS but they want those applicants to possess high-tech qualifications and skills that more typically belong to MIS professionals. This study also found that to meet this change, different approaches are being implemented to educate Systems Librarians both within and outside of library school departments through integration of information technology and Information Science curriculum enhancements, Information Science program additions, and departmental merging with other Information Science departments.

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Chapter 1

Introduction

The job title "Systems Librarian" originally referred to a traditionally trained librarian, who was responsible for managing, or administering, a library's automated systems. When automated library systems were first introduced into libraries, the vendors delivered the systems and then left. Support was provided via the telephone and a local vendor representative. Eventually, the need arose for someone among the librarian ranks to step forward and assume the position of liaison to the vendor, and to be responsible for the day-to-day operations of the system. Basically, this involved making sure the system was up and running every day. The vendor or local maintenance representative handled major technical and software problems, and the librarian responsible for the system served as the primary contact person. This librarian also became responsible for the integrity of the information contained within the database, but programming either on the systems or application level was not required. Over time, the two terms Librarian and Systems became united into Systems Librarian. A Systems Librarian was a librarian who took care of or was responsible for the automated computer system.

Technology in libraries has not stood still. It has created the need for someone in libraries to plan, implement, and support the ever-increasing technical needs of libraries. Systems Librarianship has emerged, evolved, and grown over the last two decades, slowly becoming a specialization within the field of Library and Information Science. Given the pace of technological growth in libraries, and the their attempts to keep up, this evolution and need for Systems Librarians is increasing. But what exactly is a Systems Librarian today? Does a 20-year-old definition of a Systems Librarian still apply? Given the highly technical demands today, do the job duties still support the use

of term Librarian in the job title? And, given the highly technical nature of the position, how are the technical demands for the education of Systems Librarians being met?

Of all the Library and Information Science specializations, the role of the Systems Librarian is the most under-studied. This lack may be due to the fast evolution of the specialization itself, to the specialization's relative newness within Library and Information Science, to inappropriate curricula for students with systems interests, or to the typically non-technical orientation of many MLS students. The role of the Systems Librarian is difficult to pin down for study. Its subject matter is tied to the changing nature of technology itself, the fact that most Library and Information Science curricula, bound by budgets, educate students for prototypical roles in Librarianship, and that the economic investment for technology and technology-knowledgeable faculty in such programs are prohibitive.

In today's job market, the title "Systems Librarian" encompasses a broad spectrum of highly technical duties and responsibilities. Some library schools are responding to the need for higher technological training of Systems Librarians and are taking vigorous initiatives to integrate more Information Science into their curriculum and programs, but the approaches being adopted vary among these schools and appear within library school academia as a whole, as unfocused. This is because guidance from the ALA is missing, clear research in the subject matter is not available, inter-school cooperation is lacking, and a clear definition of what a Systems Librarian does and the role they play within the library setting is nonexistent. These varying approaches among schools serve to further compound the confusion surrounding the education and employment of Systems Librarians.

One approach for some library school departments is to merge with their neighbors in the Information and Computer Science Departments so as to try and fill the IS void and meet the need. It was reported in the American Libraries October 1997 issue that the University of Hawaii School of Library and Information Studies announced its plan to merge with the Department of Information and Computer Sciences effective that Fall. Larry Osborne, the interim dean of SLIS stated that the biggest winners were the students, because the new alliance positions the library and information science program as the center for educating information professionals in Hawaii, on the mainland, and throughout the Pacific region.

Another approach for some library schools is to offer a separate Masters of Information Science degree within the MLS or MLIS Department. Indiana University's School of Library and Information Science now offers a new 42 credit hour Master of Information Science Degree (MIS). This program has a focus on information and technologies in human contexts, which emphasizes the analysis and design of information and systems. The program is designed to prepare students for careers in information management, systems analysis and design, online searching and information brokerage, competitive intelligence and research analysis, network management, and database development and marketing. The degree offers specializations in Organization and Management of Information, Internet and Network Services, Systems Analysis, or Information Retrieval. Indiana University's SLIS program requires that students pursuing either the MLS or MIS degree be computer, network, and information literate. Indiana University's SLIS states on its Website (www-slis.lib.indiana.edu /Research/index.html), that it is one of the handful of schools that has taken a lead in redefining the field of Librarianship.

Still another approach for some library schools is to begin offering Information Systems and Technology type classes as they do with Cataloging, Circulation, or Reference within their own MLS or MLIS curriculum. The University of Pittsburgh, one of America's top ten Library Schools, advertises in its program description that students may prepare for careers in such specialized areas as Information Systems and Technology. The University of Pittsburgh, in a separate department from the Library and Information Science Department, offers a Masters of Science in Information Science degree that seems more in line with the educational needs of a Systems Librarian. The program description says it is designed to prepare students to assume professional responsibilities as system analysts and designers, data base developers and managers, and information retrieval specialists. The specialization offers courses in microcomputer software, computer based management of image collections, library automation systems and services, information storage and retrieval, networking, and technologies for information management.

All three examples of the different approaches library schools have adopted are commendable efforts at resolving the need to educate Systems Librarians as MIS Professionals, but they still represent an unfocused and uncoordinated effort within Library School academia as a whole. Because the role of the Systems Librarian is tied to the evolution of technology within the library, their role is also evolving. What this role was 20 years ago, and even 10 years ago, is not what it is today. An uncoordinated response will continue until a more focused and coordinated research effort to understand the current role of the Systems Librarian within traditional Librarianship begins to appear in the journals and a unified understanding of that role exists from library to library.

Purpose of the Study

Within the Library and Information Science field it is appropriate to examine the relationship of the library, its information-providing function, and the role of the Systems Librarian. Currently, standardized job descriptions and standardized position titles for the Systems Librarian do not exist, and the 1993 SPEC Kit compiled by the ARL only provides a sample of a job/position description specific to McMaster University. For one who aspires to work as a librarian and a systems manager, this current state of affairs poses a problem. Does one need to be a MIS professional or a library professional? To what extent of either, or both, does one need to be competent? And how does one prepare? There are many differences and similarities between library systems from library to library, and in the same way, there are differences and similarities between job descriptions for Systems Librarians from library to library. There is a myriad of job titles. This causes further confusion as to the duties and responsibilities of the positions advertised. A systematic examination of the requirements for a position such as a Systems Librarian needs to be undertaken, and the implications of these requirements needs to be articulated so they can be better understood by the persons on both sides of the interview table. The focus of this study is to evaluate such job advertisements for Systems Librarians in order to get a firm definition of what it is today, and to provide some type of baseline for qualities, qualifications, and educational requirements that library employers desire in a Systems Librarian. This study should mark just a beginning. Very little study has been done in this area. Much more needs to be done.

Definition of Terms

Within this study, the term "Systems Librarian" refers to a person who holds or aspires to hold a position in which his or her principal responsibility is tied to the technology and management of all computer-based information systems in the library that are used for information storage and retrieval. On the library floor, the term "librarian" is used loosely to refer to whoever is sitting behind the reference desk or circulation counter regardless of educational background. "Librarian", in this sense, refers to anybody whose principle responsibility is tied to the dissemination of information, or its storage and retrieval operations within the library. In management terms for the purpose of this study, a professional Librarian refers to someone who has graduated from an ALA accredited library school and possesses an MLS, MLIS, Ph.D., or equivalent. For this study, an MIS professional refers to someone who holds a Masters of Information Science or Information Systems and whose principle responsibilities lies in the area of developing and managing information systems. Lastly, it should be stated that Information Science is an emergent and interdisciplinary science that studies the properties of information, the forces that govern the use of information, and the techniques of processing information for optimal storage, retrieval, and dissemination. Librarianship as seen from this perspective is an applied aspect of Information Science.

Limitations of the Study

One limitation of this study comes from the literature itself. The literature within this field of study is scanty at best, which bears witness to the fact that more comprehensive study needs to be done. Literature resources drawn upon for this study provide background information concerning the role of Systems Librarians within libraries, employment resources for Systems Librarians, and the perceived qualifications and traits that Systems Librarians need to possess to fulfill their roles as Systems Librarians. The literature also serves in part, as a starting point as to what Systems Librarianship was yesterday, and serves as a jumping off point as to what Systems Librarianship is today.

Chapter 2

Literature Review

In an excellent analysis of the role and qualifications of Systems Librarians, Susan Martin states that although there have been many studies that focused on the impact of automation on the library and library personnel, "systems librarians, on the other hand, have been almost entirely ignored, together with attendant issues such as their role, qualifications, and future" (Martin 1988, 57). This poses a problem especially if the library of the future is to be an information support center to the public. Martin sees that there is an ultimate need for a new role for libraries of which the Systems Librarian is a crucial part, but if this is to happen, libraries need to change and re-orient themselves to deal with the products of innovative information technologies before that role is taken over by another type of institution leaving libraries as museums of the past. Library directors and decision- makers need to recognize their own limitations, according to Martin, "and call upon the professional training of their systems librarians as well as their line staff in planning for the library of the future" (Martin 1988, 59).

Martin conducted a similar review of 1988 job advertisements and found they indicated insufficient attention being devoted to the current and future roles of the Systems Librarian. She found that typical advertised qualifications desired a MLS and experience with library bibliographic systems in the MARC format, but the MLS was not mandatory. Martin also found that typical job responsibilities were in the implementation of already-identified integrated online systems, or identified as such as systems for purchase and implementation. Job advertisements were remarkable as well because they did not usually include implementation of gateways to nonbibliographic data bases, support for public services, use of automated systems, exploration of expert systems, or development of CD-ROM data bases beyond solely bibliographic data,

which Martin considers critically important to current and future systems work for libraries becoming "information centers" of the future.

Martin also addresses the argument as to whether systems librarians should be librarians who have learned about technology, or computer experts who have learned about libraries. Martin concludes that the argument is fruitless because both sides have good arguments. The whole argument basically boils down to competence. A traditionally trained librarian may be able to learn the technical elements of the job readily, and the same goes for a computer expert who may be able to learn intricacies and functions of the library. The bottom line to Martin is that the competent people work out very well.

The field of Systems Librarianship, nonetheless, encompasses a broad range of computer hardware and software platforms that range from laptop microcomputers to sophisticated mainframes. The specific technical knowledge required to work with this range of competence would seem to an outside observer as a field within Librarianship that would be better left to the data processing professionals and computer experts. These types of professionals and paraprofessional have, unfortunately, little or no type of library experience. Carol Parkhurst states that "a Systems Librarian should first and foremost be a librarian, and only secondarily a computer expert" (Parkhurst 1990, 96). Although there is a need for a Systems Librarian to think in an analytical and logical manner, there is no real need for specific expertise in programming. It is more important, according to Parkhurst, that there is within the Systems Librarian "a solid understanding of library operations and of the needs of the library and its clientele" (Parkhurst 1990, 96).

Thus, Parkhurst sides for the library expert, places the role of the Systems Librarian within the people skill domain, and places emphasis on good interpersonal communication skills. Outside of consultants and salespeople, most dataprocessing professionals are not noted for their people skills, nor is it a requirement for their field. A Systems Librarian, on the other hand, "has to deal as much with people as with machines, and must have good communication skills combined with patience, tact, and understanding" (Parkhurst 1990, 96). These are qualities rarely seen in job placement ads for professional programmers and systems analysts.

Often, the title "Manager" is attached to a Systems Librarian's title in job ads, which range from Automated Systems Manager to Technology Manager. According to Felix Chu's analysis of the skills of a Systems Librarian, "regardless of the title, there is a very fuzzy definition of what this librarian does" (Chu 1990, 92). Chu attempts to clarify some of this fuzziness by proposing that a Systems Librarian is usually involved in at least three stages of the life of a library system: the planning of a new system or the migration to a different system; the installation and implementation of the system; and the maintenance of the system. Involvement in each of these three stages proposed by Chu requires that the Systems Librarian has considerable knowledge in the areas of software engineering, hardware, systems programming, telecommunications, systems analyst, and electrical engineering. This is a tall order in any field, and Chu states that "as the requirements presently stand, it would be a very unusual individual who can qualify" (Chu 1990, 101). Whoever the person is who fills the Systems Librarian role, according to Chu, "has to be foremost a librarian with experience in library automation" (Chu 1990, 101), regardless of their technical background.

Chu also comes down on the side of the library expert and places Systems Librarianship within the people skill arena because even though each of the stages he proposes may require quite different skills, one common denominator between them all is that the person involved as the Systems Librarian must have a thorough understanding of the library and its operations. A person in this type of position should have several years of broad based experience, but Chu states that "the overriding concern should be to find someone who can communicate well with the various departments of the library and data processing personnel, using their jargon when necessary" (Chu 1990, 99). Systems librarians should primarily be experienced librarians with academic training in computer science, according to Chu, because 'pure' computer science graduates may not have the people skills for interpersonal communication" (Chu 1990, 100).

Library employers in many respects are similar to other business employers and in other ways they are quite different. Although Elizabeth Lorenzen emphasizes library employment resources for job seekers, she makes some salient points about the job market, and perhaps sheds a little light on the reason for the non-specific and fuzzy job ads. With the changing pace of technology and stiffer budget constraints, it makes sense that many library directors are faced with having to do more with less, and need their employees to be more generalist in their knowledge, possessing a broader base of skills. This means "employers are looking for flexible individuals with a variety of skills who can work in constantly changing environments" (Lorenzen 1995, 11).

Graeme Muirhead conducted an excellent study in which he examined the role of the Systems Librarian within the libraries of the United Kingdom. Although Muirhead's study focuses on the actual experiences of practicing Systems Librarians, Muirhead agrees that scant attention is paid to System Librarians in the LIS press.

Muirhead found that where the position of a Systems Librarian existed from library to library, the duties the position encompassed seemed to vary a great deal. He further found that the apparent lack of homogeneity of duties and responsibilities for the Systems Librarian "is matched only by the diversity of terms used to refer to the post from institution to institution" (Muirhead 1993, 123). Muirhead is referring to the myriad of terms used as job titles for the Systems Librarian. Some of the examples for job titles he found included Automated Systems Librarian, IT Librarian, Automation Librarian, Computer Officer, Assistant Librarian (Automation), and so on. Muirhead also found that the "absence of uniformity in the terminology of system-related posts has merely added to the nebulousness and uncertainty which surrounds these posts" (Muirhead 1993, 124). Muirhead's study shows that the current problem in Systems Librarianship in not a peculiar phenomenon native to the United States alone, but is being experienced, at least, in the United Kingdom as well.

Turning to the education of Systems Librarians, library schools are not keeping pace with the need for library experts with technological training. There is a definite need for change in the way library experts are trained to include more information technology because "the field is inherently dependent upon technology and must respond to new developments or risk becoming obsolete as a profession" (Wallace and Boyce 1987, 159). This speaks not only to the Systems Librarian, but also to the rest of the library staff from the circulation clerk to the Director as well, because they all have a stake in the obsolescence of the profession. Wallace and Boyce stated eleven years ago that the paper-based era of information systems is coming to an end and "schools of library and information science have been struggling for thirty years to cope with the demands of the change to electronic information systems" (Wallace and Boyce 1987, 159). Wallace and Boyce do discuss the problems in the current library school

environment with providing the type of education Systems Librarians need to achieve the needed level of expertise, and in fact provide an outline for education to help the situation, but care must be taken so that this type of education does not come at the expense of traditional library education.

Bert Boyce and Kathleen Heim examine the skills that will be needed by Systems Librarians in the nineties, and state that Systems Librarians "will first need considerable management ability" (Boyce and Heim 1988, 71). They believe that there will be a continuing need for Systems Librarians in the last decade of this century, but that their role will be slightly different. They believe that Systems Librarians will not be as involved in the design and implementation of major library systems since "we have reached the point where turnkey systems exist for all regular library functions and where more and more integrated systems which provide for interaction among these component systems are available" (Boyce and Heim 1988, 70). In other words, they state that the era of initial design for libraries is past, but the need for Systems Librarians is still undiminished. Although Boyce's and Heim's words still bear a certain truth, these words were written before the real impact of the Internet, World-Wide-Web, and the PC explosion were felt upon libraries.

The problem in Systems Librarianship and library school education is that library schools can not expect computer science graduates to spend an additional year or two in graduate school in order to qualify for a job that will pay them twenty percent less than those which are offered to them when they receive their bachelor's degree. Another problem is that "the reasons that these students seldom select library and information science as a graduate degree are tied to salary and image" (Boyce and Heim 1988, 74). Training students in the library schools to be Systems Librarians is not an easy matter as well since most graduates come from a Humanities background, have

aptitudes antithetical to learning higher technology, and most Universities discourage the provision of class work which are really undergraduate skills taught on a graduate level. Part of the solution proposed by Wallace and Boyce, which include sixth year certificate programs and joint or second Masters degree programs to provide the level of expertise needed to produce competent Systems Librarians, is a good starting point.

John Corbin offers another type of solution based on commitment and cooperation between libraries and library schools. Corbin states that libraries are caught in and are reaping the benefits of three revolutions, namely, the computer revolution, the information revolution, and the communications revolution. The computer revolution began earnestly after World War II. The information revolution paralleled the computer revolution until where we are today with a society information-dependent and information-driven. The communications revolution followed after further developments of computers and related technology, which eventually allowed instantaneous transmission of digital and voice signals anywhere around the world. But Corbin asks the question, "What of the education of librarians in such an age?" (Corbin 1988, 78), and, "What must be done to educate librarians to work in libraries and information centers utilizing information technology extensively?" (Corbin 1988, 78). Corbin answers his own questions by stating that library schools must first provide librarians with a sound foundation in the principles and concepts of library and information science, but library schools must also take responsibility for turning out information-, systems-, and technology- oriented librarians, maintain a fresh and relevant curriculum which reflects the latest concepts and uses of information technology within libraries, mandate that its faculty members update themselves continuously, graduate flexible and innovative librarians, and better tailor its continuing education offerings to the needs of the libraries hiring its graduates. This is a

real need to libraries, according to Corbin, if they are to ensure themselves of a continuous supply of staff who can work effectively in an age of information technology.

The burden does not fall solely upon the library schools, according to Corbin, because libraries must do their part by providing more thorough on-the-job training, an atmosphere for further education, guidance for continuing education, role models to follow in the continuance of education after graduation, access to opportunities for continuing education as part of its staff development program, and to actively encourage individual research and publication on the part of its librarians. Thus, Corbin proposes a coordinated commitment between the library schools and the libraries employing librarians in order for not only Systems Librarians, but other librarians as well, to meet the challenges presented to libraries in this information age.

Chapter 3

Methodology

Data for this study was collected from electronic employment services on the Internet, World Wide Web, and various EMAIL LISTSERVs of use for Systems Librarians. The data was collected over a 1-year period and consists of employment listings, job advertisements, position announcements, and email notifications where job descriptions of duties, responsibilities, and requirements exist. 100 job position notifications were collected and is comprised of 45 public, 45 academic, and 10 special library positions. The job announcements chosen were for full-time, permanent positions in U.S. libraries. A qualitative content analysis was performed on the advertisement's content taking special note of the frequency of the qualifications, educational requirements, personality traits, years of experience, hardware platforms, software applications, operating systems, and specific skill areas such as communication skills, interpersonal skills, networking skills, programming languages, and technical expertise.

Chapter 4

Analysis of Data

Job Title Analysis

In analyzing specific job titles for Systems Librarians, many different job titles were found to be used. Out of 100 job titles, there were 64 different titles used. The title Systems Librarian was used in 26% of the total ads and was the most frequently used job title. Systems Librarian was used in 4% of public library ads, 48% of academic library ads, and 20% of special library ads. The words "Systems" and "Librarian" appearing in the same job title were significant. Although this combination increased the public library percentage to 6%, the academic library percentage rises to 64%, and special library percentage remained at 20%. Library Systems Coordinator was the second most used job title comprising just 3% of the total ads and 6% of academic library ads. Library Systems Coordinator was used exclusively in the academic library ads. The rest of the job titles used fell within the 1 to 2% range of total ads and 4% in their respective categories. A complete listing of job titles can be seen in Appendix A. Surprisingly, the job title Automated Systems Librarian and Automated Systems Manager were used exclusively in the public library ads but together only comprised 8% of the total public library ads.

This job title analysis shows little agreement in the public library sector as to the position a System Librarian holds within the library. In the academic sector, there seems to be wider agreement. The most frequently used job title, System Librarian, in the academic and special library job ads was among the less frequently used job ads in the public library ads. This shows a gap in understanding between academic and public library sectors. The job title appears only in 6% of the public library job ads. In an analysis of the words used to compose the job titles, the top ten words that fell at least

above 10% in usage were Library or Librarian, System or Systems, some word derived from Technology, Automated or Automation, Services, Manager, Coordinator, Information, Specialist, and the words Computer and Network tied for the tenth spot. Figure 1 shows a breakdown in percentages of the words used to compose job the titles.

Fig. 1

Top Ten Words Used in Job Titles
(in percentage)

Words Used	Public	Academic	Special	% Total Ads
Library/Librarian	35	88	70	63
System/Systems	33	84	8	57
Technology derivation	35	8	4	22
Automated/Automation	35	6	4	21
Services	15	11	8	16
Manager	22	4	4	14
Information	11	8	8	13
Coordinator	15	11	0	12
Specialist	13	0	4	8
Computer	11	2	0	6
Network/Networking	6	6	0	6

In evaluating the top five words used, the word Library or Librarian was, as no surprise, the most frequently used word in 63% of the total ads. Library or Librarian was used in 35% of the public, 88% of the academic, and 70% of the special library ads. The word System or Systems was used in 57% of the total ads, in 33% of the public, 84% of the academic, and 8% of the special library ads. Some derivation of the word Technology was the third most used word. The derivations ranged from technology, to technician, to technologist, to technical. A technology derivation was used in 22% of the total ads, 35% of the public, 8% of the academic, and 4% of the special library ads. Automated/Automation was fourth and was used in 21% of the total ads, 35% of the public, 6% of the academic, and 4% of the special library ads. In the fifth spot came the word Services and was used in 16% of the total ads, 15% of the public, 11% of the academic, and 8% of the special library ads.

From the findings, it can be seen that public libraries value the words systems, automation, and technology equally. Library/Librarian, System/Systems, a technology derivation, and Automated/Automation was all used equally in about 1/3 of the public library ads. It seems that public libraries do not particularly distinguish between the three labels, or they are used synonymously in the public library sector, or that public libraries give equal weight or value to these words.

It is also apparent from the findings that academic libraries, first of all, are looking for a librarian because it was the word most often used in their ads. Library/Librarian shows up in 88% of their ads. System/s is the second most used word in academic library job ads showing up in 84% of their ads. This shows that academic libraries may have a clearer conception of a Systems Librarian since Systems and Librarian shows up in over half of their job ads.

It is also apparent from the analysis that academic libraries place a higher value on the word systems, and public libraries place a higher value on the word automation. This may shed light on divergent philosophies between public and academic libraries in how they view Systems Librarians, and shed light on the fact that academic libraries may be more "systems" oriented. Another possibility may be more due to budgetary concerns than a value judgement in that academic libraries typically have more money to put into and develop library systems than do public libraries. This may not apply, however, to very large public libraries or small academic libraries. Public libraries, on the other hand, may be more focused on their single automated library system and on a single technologically oriented librarian to manage it, which may be why the word Manager is used 5 times as much in public library job ads as in academic job ads.

Taken together, it appears on the surface that public, academic, and special libraries are asking for first and foremost a Librarian by name, or a professional that attaches the word Librarian to their perceived job title. Secondly, they are asking for a Systems or Automation professional. Public libraries seem indifferent at whether the word System/Systems, Technology/ Technologist, or Automation/Automated is attached to the title.

Job Description Classification Analysis

In reviewing the individual job classifications, 1,602 nouns, action verbs, and adjectives were used to describe the job duties, responsibilities, experience desired, and qualifications for the job position described. These words were deemed as relevant words and were recorded for the study. These words were divided into personality traits desired, specific operating systems experience sought, hardware platforms, library vendor systems

experience requested, programming languages requested, action words used to describe job duties, specific skill sets requested, and specific experience areas requested. Ranging from the highest percentile to the lowest, the following listing in Figure 2 contains the words used to describe the specific technological qualifications, skills, and experience sought by library employers.

Figure 2.

Qualifications, Skills, and Experience Listing
Networking Skills and Experience Requested

Networking	*% Total Ads*
LANs	31
Novell	22
Telecommunication Protocols	16
TCP/IP Protocols	15
WANs	9
Z39.50 Protocols	5
Ethernet	3
HTTP Protocols	1

Specific Operating Systems Requested

Operating Systems	*% Total Ads*
Unix	33
WindowsNT	30
Windows95	19
Macintosh	11
Windows3.1	10
VMS	8
DOS	5
Hardware Platforms	
Dec Alpha	7
Solaris	3

Library Vendor Systems Experience Requested

Vendor System	*% Total Ads*
DRA	18
Innovative Interfaces	14
Dynix	9
NOTIS	7
Sirsi	5
Horizon	1
Hollis	1

Programming Language Experience Requested

Language	*% Total Ads*
HTML	25
Java	10
CGI	7
PERL	5
SGML	3
C,C++	3
SQL	2
PICK BASIC	1
SAS	1

Personality Traits Requested

Trait	*% Total Ads*
Oral/written communication skills	56
Good interpersonal skills	22
Service-orientated	10
Flexible	8
Creative	6
Enthusiastic	3
Innovative	3
Energetic	2
Motivated	2

Specific Skill Set Requested

Skills	*% Total Ads*
Management skills	37
Organizational skills	14
Programming skills	12
General computer skills	10
Technical skills/knowledge	8
Analytical skills	7
Problem-solving skills	2

Action Verbs Used To Describe Job Duties

Verbs	*% Total Ads*
Training	57
Plan/planning	45
Website/page development	42
Development	39
Maintenance/maintain	32
Coordinate	29
Implement (new/existing tech)	28
Supervise	28
Troubleshoot	21
Provide support	20
Technical support	20
Analyze/analysis	18
Leadership	16
Liaison (other depts. & vendors)	16
Installations	15
Oversee	13
Perform upgrades	11
Evaluate	11
Work in team environment	10
Budgeting	8
Consult	8
Design system	8
Committee work	7
Recommend	7
Travel	6
Direct	5
Integrate	5
Assist staff/patrons	4
Diagnose problems	4
Grant writing	4
Database work	3

Specific Experience Areas Requested

Experience With	*% Total Ads*
Internet	58
Networking (general)	40
Hardware (general)	31
PC software (general)	31
CDROM technology	28
Reference	23
Computer operations	15
Integrated library systems	15
OCLC	13
Library operations	11
MARC record	10
Client/server technology	7
Desktop applications	7
Automated systems	5
Electronic resources	5
ILL	5
Emerging technologies	4
Experience (general)	4
MS products	4
hands-on	3
Automation experience	3
Migration	3
Digital imaging	2
Computer expertise	1

In analyzing job classification descriptions, Internet experience, training, and good oral/written communication skills ranked the highest in the over 50 percentile. It was found that Internet experience was the most sought after category appearing in 58% of the total ads. For position responsibility descriptors, the word 'training' ranked the highest appearing in 57% of the total job ads. For personality traits, good oral and written communication skills seemed equally important in the total ad distribution as it appeared in 56% of the total ads. In the 40th percentile, plan/planning, WebSite/ WebPage development, and general networking experience were highly sought. Plan and planning appeared in 45% of the total job ads, Website/WebPage development appeared in 42% of the total job ads, and general networking experience/knowledge appeared in 40% of the total job ads. Continuing down the percentile rank, management skills appeared in 37% of the total job ads, UNIX experience appeared in 33% of the total job ads, Local Area Networking skills, general hardware experience, and general PC software skills appeared in 31% of the total job ads respectively, and WindowsNT appeared in 30% of the total job ads. Down into the 20th percentile, there were many more qualities sought. Coordinating appeared in 29%, implementing, supervising staff, and CDROM technology appeared in 28% respectively, HTML skills appeared in 25%, Reference appeared in 23%, Novell and interpersonal skills appeared in 22%, troubleshooting appeared in 21%, and support/tech support appeared in 20% of the total job ads.

It is clear that Internet skills and experience are the most sought after skill in the job ads. This is not surprising considering the influx of Internet technology into libraries in the recent years. Close behind Internet skills came training as part of the job description. Training in this sense was in the majority directed at training other staff. Some, less than 5%, included patrons in with training.

One significant finding in the job ads is the lack of requesting any traditional librarian skills or experience as Figure 3 shows. The largest percentage deals with Reference experience and duties, but this is in relation to Reference duties that would be assigned as part of the job responsibilities. Outside of OCLC and general library operations experience, the rest of the requests for specific library experience dealt with jobs that were combined with other job classifications within the library, such as Head of Technical Services and Library Automation, or Supervisor of Automated Systems and Circulation.

Figure 3.

Specific Library Skills Sought

Skill	*% Total Ads*
Reference duties	23
OCLC experience	13
Library operations	11
MARC record	10
ILL experience	5
Bibliographic Systems	5
Collection development	5
Cataloging	4
Acquisitions	3
AACR2	2
LC Subject Headings	1

Educational Requirements

The results of the educational requirements analysis yields some significant results as Figure 4 shows. In the analysis of the job ads, it was found that library employers desire an MLS or MLIS in 77% of the job ads. 9% of the library employers requested a MLS or a MIS. 8% desired specifically a BS in Computer Science, 3% omitted degree requirements, 2% requested a BS in Computer Science but preferred an MLIS, and 1% requested an MA but did not specify as to the specific area of study. The educational requirements findings are significant in that the majority of library employers in the job ads required an MLS or MLIS, or MIS, and specified that the degree be received from an ALA accredited school or program. This means that library employers are looking for traditionally trained and accredited librarians more than traditionally trained computer professionals or some other type of professional.

Figure 4.

Educational Requirements

Type Degree	*% Total Ads*
MLS/MLIS	77
MLS/MIS	9
BS Computer Science	8
Not Reported	3
BS, MLS preferred	2
MA, unspecified	1

Discussion

Yesterday and Today

The job ads studied reveal many new insights into the qualifications, skills, and roles of the Systems Librarian in the library setting. It is clear that library employers are seeking traditionally trained library professionals from ALA accredited library programs. It is also clear from the analysis that library employers are seeking high-tech qualifications from their Systems Librarians with lots of Internet, training, information systems, networking experience, and Website/WebPage development skills and want to call them Librarians. The problem is that there is little mentioning of any traditional librarian specific skills or experience. The highest percentage for traditional library training had to do with Reference Desk duties. Academic libraries had the greater percentage of requiring Reference duties, but both public and special libraries had a significant percentage as well.

It is interesting to note that with such high-tech skills being requested of Systems Librarians, that there was not a significant request for more programming skills outside of HTML authoring and some Java programming. This speaks to the prevalence of vendor-based integrated library systems in the libraries, and the tight grip library vendors continue to have over the library community's present and future software development. This is a monopolizing situation that only fosters continued vendor dependency and *avoir carte blanche* by vendors within the library community.

Typical advertised job ads a decade ago desired a MLS and experience with library bibliographic systems in the MARC format. Although MARC knowledge ranked at 10% of the current job ads, bibliographic systems knowledge or experience ranked at only 5%, which shows that what library employers were looking for in Systems Librarians just 10 years ago has dramatically changed. Implementation of

already-identified library systems was also found in typical job ads of 10 years ago, but implementation in this sense today has fallen in relative importance to give way to implementation of technologies that were not usually available 10 years ago. These were specifically the implementation of gateways to nonbibliographic databases, support for public services, use of automated systems, exploration of expert systems, and development of CDROM data bases beyond solely bibliographic data. The advent of Internet and CDROM networking technologies in the library community has greatly changed the importance of implementing these gateways in the job ads.

The concept that a Systems Librarian should first be a librarian and secondarily an MIS professional is no longer supported by the job ad descriptions. Library employers are asking for librarians in the job titles, but the job descriptions they are providing are calling first and foremost for MIS professionals and only marginally for library professionals. The only saving grace for this concept today is that library employers are primarily requiring graduates of ALA accredited library programs to hold a MLS or MLIS. This can only mean that they are looking for librarians who are MIS professionals. The statement that Systems Librarians must have good communication skills still bears true in the job ads today.

It is clear from the job ads that Systems Librarians are still involved in at least three stages of the life of a library system: the planning, installation and implementation, and the maintenance of the system. All three stages were represented in significant percentages in the job ads to lend truth to this statement. The job ads only lend partial truth to the statement that a Systems Librarian must have considerable knowledge in the areas of software engineering, hardware, systems programming, telecommunications, systems analyst, and electrical engineering. There is little proof in the job ads that software engineering and electrical engineering skills are needed.

There is still a myriad of job titles for Systems Librarians, but the job ads show that there is some hope. The fact that over half of the ads contained the words Systems and Librarian in the job title is encouraging. The fact that 4 to 6 percent of the job ads for public libraries contained the words Systems and Librarian is discouraging. Somehow communication is being lost between the academic and public sectors. Special libraries seem to be keeping in step with the academic sector and perhaps the public library community needs to do the same thing.

Over a decade ago, Wallace and Boyce wrote that there is a definite need for change in the way library experts are trained to include more information technology. This is because "the field is inherently dependent upon technology and must respond to new developments or risk becoming obsolete as a profession" (Wallace and Boyce 1987, 159). Library schools are finally beginning to recognize the need for such change and are taking steps to insure the appropriate training of Systems Librarians through Information Science curriculum enhancements, program additions, and departmental merging. Even though the approaches being adopted are unfocused and uncoordinated, any steps towards increasing technological training within the traditional library school curriculum are positive steps. It is clear from this study that the field of Librarianship is indeed inherently dependent upon technology and must respond to new developments. The prevalence of requests in the job ads for Internet, Website/WebPage development, networking, and CDROM technology skills and experience makes this clear.

Conclusion

Gathering the available information together from this study, the following job title and job description are proposed based upon the ranking of specific skills and experience areas that appeared in the percentages above 20%.

Job Title: Systems Librarian
Education: MLS or MLIS from an ALA accredited school or program.

Experience/Skills desired:

1. Internet experience including Website/WebPage development and HTML authoring.
2. Local Area Networking experience - specifically with hardware/software technology and protocols including Novell, telecommunications, and TCP/IP.
3. Experience with UNIX and/or WindowsNT environments.
4. General experience with PC hardware and desktop software applications.
5. CDROM technology and networking.

Duties and Responsibilities:

1. Train staff/patrons.
2. Plan, develop, coordinate, implement and manage the library's technology and automated library system.
3. Perform system maintenance including troubleshooting of hardware and software problems.
4. Supervise staff if needed.
5. Perform Reference duties/Reference Desk coverage if required.

It is apparent from this study that the definition of Systems Librarianship in what it was 20 years ago, and even what it was 10 years ago has changed dramatically. This is due naturally to the evolution of the specialization tied to the evolution of technology within the library. It is also apparent from this study that library employers are demanding greater technical skills from Systems Librarians and very little traditional library skills. What library employers are asking for in the job titles are not the same as

what they are asking for in the job descriptions. Library employers are asking for librarians primarily in name only because there is very little mentioning of traditional library skills in the job descriptions. It is clear the title they want to assign to the applicant bears the name 'Librarian', but the skills and experience they are seeking belong to MIS professionals. A decade ago, Systems Librarians were more librarians than MIS professionals. Now, Systems Librarians are more MIS professionals than Librarians. Today, the job title Systems Librarian refers typically more to a MIS professional who plans, implements, and supports technology within the library setting. The title 'Librarian' refers more to where they work and their educational degree, than to their duties and responsibilities on the job.

Appendix A
Job Title Listing

TITLE	CITY	STATE
Access Services Coordinator	Wellston	OH
Administrative Librarian/Automation Services	Decature	GA
Assistant Director for Networked Information & Ed	Cleveland	OH
Assistant Librarian, Systems	Tuscon	AZ
Automated Systems Librarian	Vancouver	WA
Automated Systems Librarian	Eau Claire	WI
Automated Systems Manager	Cuyahoga Falls	OH
Automated Systems Manager	Golden	CO
Automation Coordinator	Rockingham	NC
Automation Coordinator	Cambridge	MN
Automation Librarian	Gary	IN
Automation Manager	Goshen	IN
Automation Services Supervisor	Kansas City	KS
Automation Specialist	Anchorage	AK
Automation Supervisor	Vorhees	NJ
Automation Technician	Lawrence	KS
Computer Operations Coordinator	Madison	WI
Computer Systems Administrator	Bellevue	NE
Coordinator of Reference and Automation	Columbia	MO
Digital Services Librarian	Toledo	OH
Director of Library Technologies	Columbus	OH
Director, Library Information Systems	Sacramento	CA
Director, Library Information Technology Division	Topeka	KS
Director/Computer & Bibliographic Services	Littleton	CO
Electronic Resources Librarian	Lafayette	IN
Electronic Services Librarian	Canton	NY
Head of Technical Services and Automation	Arlington	TX
Head of Technical Services and Automation	Hackensack	NJ
Head, Library Systems	Newark	DE
Head, Systems	Knoxville	TN
Information Services Librarian	San Francisco	CA
Information Systems Head	East Brunswick	NJ
Information Systems Librarian	Lancaster	PA
Information Technologies Coordinator	Waltham	MA
Information Technology Specialist	Canton	MI
Information Technology Specialist	Seymour	IN
Librarian Consortium Support Librarian	Kansas City	MO
Librarian III/Head of Library Technology	Roanoke	VA
Library and Information Services Dept Supervisor	Helena	MT

Library Automated Systems Manager	Portland	OR
Library Automation Systems Specialist	Yuma	AZ
Library Computer Systems Specialist	Arlington	TX
Library Systems Assistant	Pittsburg	KS
Library Systems Computer Technician	Phoenix	AZ
Library Systems Coordinator	Chicago	IL
Library Systems Coordinator	Cleveland	OH
Library Systems Coordinator	Atlanta	GA
Library Systems Manager	New York	NY
Library Systems Manager	Columbus	OH
Library Systems Specialist	Santa Clara	CA
Library Technologist	Griffin	GA
Library Technology Consultant	Indianapolis	IN
Library Technology Systems Coordinator	Manchester	GA
Manager of Information Services	Oakdale	MN
Manager of Information Services	Worcester	MA
Manager of Network Services	Christiansburg	VA
Network Coordinator	Omaha	NE
Network Librarian	Indianapolis	IN
Network Technology Information & Services Manager	Garrettsville	OH
Senior Automation Technician	Southgate	MI
Senior Automation Technician	Southgate	MI
System Administrator	Kokomo	IN
System Manager	Moorhead	MN
System Specialist	Greensboro	NC
Systems and Technical Services Librarian	Bend	OR
Systems Librarian	Johnson City	TN
Systems Librarian	Dayton	OH
Systems Librarian	Durham	NC
Systems Librarian	Cambridge	MA
Systems Librarian	Mobile	AL
Systems Librarian	Hammond	LA
Systems Librarian	Seattle	WA
Systems Librarian	West Hartford	CT
Systems Librarian	Cambridge	MA
Systems Librarian	Newport	RI
Systems Librarian	Boston	MA
Systems Librarian	Columbia	SC
Systems Librarian	Edinburg	TX
Systems Librarian	Greenville	SC
Systems Librarian	Connecticut State Univ	CT
Systems Librarian	Santa Monica	CA
Systems Librarian	St. Louis	MO
Systems Librarian	Minneapolis	MN
Systems Librarian	Troy	NY

Systems Librarian	Rootstown	OH
Systems Librarian	Ruston	LA
Systems Librarian	Portland	OR
Systems Librarian	Martin	TN
Systems Librarian	Northfield	MN
Systems Librarian	Acton	MA
Systems Librarian	McLean	VA
Systems Librarian for Microcomputers and Networking	Knoxville	TN
Systems Manager	Terre Haute	IN
Systems/Electronic Resources Librarian	Charleston	SC
Systems/Media Librarian	Amherst	MA
Technical Services and Automation Librarian	Elyria	OH
Technology Coordinator	Portsmouth	OH
Technology Manager	Lorain	OH
Technology Manager	Euclid	OH
Technology Specialist	Indianapolis	IN

COUNT OF TITLE: 100

Appendix B

Internet, LISTSERV, and World Wide Web
Resources for Job Ads

American Society for Information Science. LISTSERV: asis-l@asis.org

American Library Association. http://www.ala.org/education/latejobs/rider.html

Association of Research Libraries. http://www.arl.org/careers/vacancy.html

BUBL, Bulletin Board for Libraries. http://Bubl.ac.uk/news/jobs/#usa

Cleveland Area Metropolitan Library System. http://www.camls.org/index.html

Kent State University School of Library & Information Science.
LISTSERV: ksuslis- l@listserv.kent.edu

Library Journal Digital. http://classifieds.bookwire.com/ljdigital.classifieds

LIBJOBS, a LISTSERV service of IFLANET.
LISTSERV: libjobs@infoserv.nlc-bnc.ca

Library of Congress Jobs. gopher://marvel.loc.gov/11/employee/employ

Listing of Library Jobs and Events.
LISTSEV: LISTPROC@Lists.N
Internet: http://info.lib.uh.edu/liblists/docs.acrlnyl.htm

Michigan Metronet. http://metronet.lib.mi.us/CANT/posting.html

Nesbeitt, Sarah L. 1998. Library Job Postings on the Internet.
http://www.personal.si.umich.edu/~nesbeitt/library.jobs.html

OhioNet. http://www.ohionet.org

Special Library Association Job Search Online.
http://www.sla.org/professional/job.html

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